

REMARKS

Reconsideration of the application is respectfully requested for the following reasons:

1. Amendments to Claims

Claim 1 has been amended to recite that light is either guided from the LED die to the output by the single light guide medium, or reflected by a paraboloid into a path parallel to the direct optical path from the LED die to the output.

The paraboloid was originally recited in claims 2-4, which have been canceled. The recitation of reflecting light that is not parallel into a path parallel to the optical path is supported by the description in lines 4-9 on page 4 of the original specification, which states that:

...Light (i.e., not parallel to the optical path 23) emitted from the LED die 1 at the focus 242 will impinge on the paraboloid 24. Next, light will reflect from the paraboloid 24 in a path parallel to the optical path 23. Hence, almost all rays of light emitted from the LED die 1 will be guided to the light guide output 22 prior to impinging on the surface of an object.

As a result, it is respectfully submitted that the additions to claim 1 do not represent “new matter.”

2. Rejection of Claims 1-3 and 5 Under 35 USC §102(e) in view of U.S. Patent Publication No. 2005/0007346 (Ma)

This rejection is respectfully traversed based on the following differences between the light guiding arrangement disclosed in the Ma publication and the light guide module of the claimed invention:

- (1) In Ma, the light source of the optical mouse is an “LED,” which is typically comprised of both an “LED die” and a transparent enclosure that encapsulates the LED die. Thus, light from the LED die must pass through the enclosure *and* the optical conduit, resulting in transmission losses that occur at the interface between any two different transmission media. In contrast, the claimed invention uses a single light guide medium enclosing the “LED die,” *i.e.*, the LED die enclosure itself forms the light guide conduit.

- (2) The claimed LED die is effectively a point source located at the focus of the paraboloid so that all non-parallel light from the die is reflected to be parallel to the output path, resulting in very low light loss. The light source of Ma is large and not attempt is made to dispose it at the focus of the paraboloids disclosed therein. As illustrated in Fig. 3B of Ma, the reflected light is clearly not parallel to the direct optical path from the light source to the output.
- (3) The claimed paraboloid is only at the “input” of the light guide. The light guide itself is cylindrical and can be made arbitrarily long due to the parallel reflection achieved by placing the point-source-like die at the focus of the input paraboloid. In contrast, the entire light guide shown in Figs. 2A and 3B of Ma (the only paraboloid embodiments) is paraboloid shaped, necessitating the further inclusion of a reflector cup 213 to surround the LED. The claimed arrangement does not require such a reflector cup.

Because the Ma publication fails to disclose or suggest an LED die disposed at the focus of an input paraboloid of a single optical medium, as claimed, so as to reflect non-parallel light in a direction parallel to the output optical path, it is respectfully submitted that the Ma publication does not anticipate or suggest the claimed invention, and withdrawal of the rejection of claims 1-3 and 5 based on the Ma publication is respectfully requested.”

3. Rejection of Claims 4 and 6 Under 35 USC §102(e) in view of U.S. Patent Publication Nos. 2005/0007346 (Ma) and 2005/0127543 (Rickering)

This rejection is respectfully traversed on the grounds that the Rickering publication, like the Ma publication fails to disclose or suggest an LED die disposed at the focus of an input paraboloid of a single optical medium, as claimed, so as to reflect non-parallel light in a direction parallel to the output optical path.

As discussed in the previous response, the optical medium is not a single optical medium as claimed, and therefore suffers from transmission losses at the interface between media. Furthermore, while one of the media of Rickering has a curved surface, the curved surface is not

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a paraboloid arranged to reflect light to the output, as is now recited in claim 1, much less one that reflects non-parallel light in a parallel direction, as also recited in amended claim 1. Instead, as disclosed in the Rickering publication, light must pass through the curved surface on its way to the output, which consists of lenses 22. Therefore, Rickering could not have suggested modification of the light guide of Ma to include a light die at a focus of an input paraboloid of a single optical medium, as claimed, and withdrawal of the rejection of claims 4 and 6 under 35 USC §103(a) is respectfully requested.

Having thus overcome each of the rejections made in the Official Action, expedited passage of the application to issue is requested.

Respectfully submitted,

BACON & THOMAS, PLLC

A handwritten signature in black ink, appearing to read 'B. Urcia', with a long horizontal line extending to the right.

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